

THE MOTOR AGE

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NO. 11.

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INFORMATION FOR FUTURE BUYERS

EDITORIAL COMMENT ON THE AUTOMOBILE AND THE INDUSTRY—WHAT AN AUTOMOBILE IS AND WHAT IT WILL DO—ADVANTAGES AND DISADVANTAGES OF VARIOUS TYPES—POINTS THAT SHOULD BE OBSERVED BY PROSPECTIVE PURCHASERS

The following review is addressed to prospective buyers of automobiles and is published in response to numerous requests for information from people who are interested in the problem of self propelled vehicles, because of an intention or a desire to purchase these vehicles, either as soon as possible or at some indefinite time in the future, but who lack the information necessary to enable them to consider the question with any degree

of intelligence and who are bewildered by announcements, catalogues and irresponsible newspaper articles which claim all sorts of possible and impossible performances for vehicles which they pretend to describe or which condemn in unmerited manner the entire motor vehicle industry. What follows contains nothing new and nothing that has not already been printed in the columns of this publication within the past few months, or in the

Cycle Age, which devoted a weekly department to the motor vehicle problem for two years previous to the publication of *The Motor Age*. The object of this resume is merely to condense into moderate space and convenient form, information for which a large number of people are clamoring and to do it in such a simple manner that it may be understood by the veriest tyro—for the study of automobiles includes so much that is technical and complex as to be utterly unintelligible to the ordinary reader. In its en-



Decauville Motocycle—French gasoline vehicle.

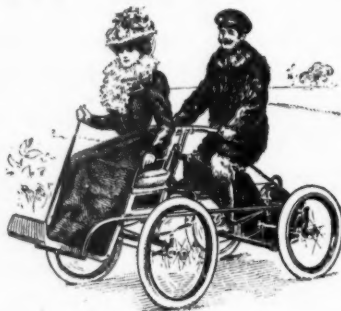
tirety, it is a problem for men of technical education and long mechanical experience. What the public wants to know is not the difficulties that have been or remain to be overcome or the means by which results are obtained, but what results have been obtained and of what value these results are to the prospective purchaser of the horseless vehicle. In other words the public desires to know what it can get, now, or in the near future, for its money—what a horseless car-



De Dion Wagon—French gasoline vehicle.

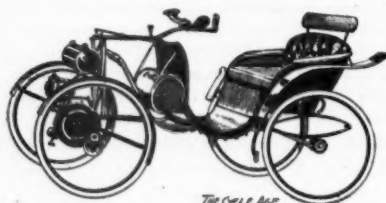
riage is and what it will do. An attempt will be made to tell this, in as far as it appertains to private passenger vehicles.

For the benefit of those who have an idea that it is possible to buy a perfect automobile, it may be as well to state,



French Gasoline Quadricycle.

in the beginning, that such does not exist, nor is it likely to come into existence for some years hence. This may be a surprise to those who are aware of the fact that there are many thousands of self-propelled vehicles that have been in operation in France for several years past and that they are increasing in number as rapidly as the manufacturers can turn them out. It is sufficient answer to those



The Cycle Age

Victoria-Sun Carriage—German gasoline vehicle.

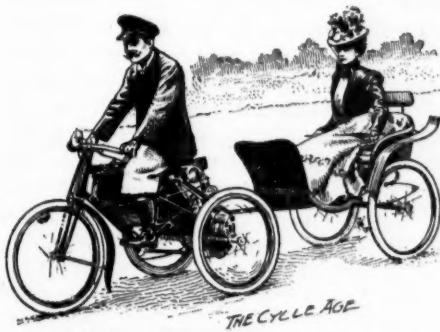
who think that the French automobile approaches perfection, to remind them that the United States leads the world in mechanical construction of almost every description. American machinery, for a multiplicity of purposes of manufacture and agriculture, has superseded foreign products, even in the home markets of the latter. The world recognizes the mechanical genius of the Yankee as it does the scientific researches of the Teuton. The novelty that is near enough perfection to satisfy the volatile Frenchman is too far from that point to offer attractions to the American public with its appetite for mechanical perfection. Although Americans are critical of all mechanical constructions, it does not follow that they

are equally as eager for novelties. The French lead the world in the pursuit of novelties—and the automobile is a novelty, despite the fact that the first locomotive, the progenitor of our marvelous railroad systems, was an automobile, in the exact sense in which the term is used to-day.

The Situation in France.

To return to the French, Paris has been filled for the past few years with noisy, ill-smelling, bone-wracking, dirt producing vehicles which have been able to travel more miles in an hour, a day, a year than the best of horses and at a cost per vehicle far less than the cost of a horse's feed. This was enough for the Frenchman. He hailed the automobile as the Messiah of vehicles and was con-

capacity for two is provided two seats are usually arranged tandem fashion although there are some tricycles which have one



French Gasoline Tricycle with Trailing Cart.

seat sufficiently wide to accommodate two persons, side by side. Many of the tricycles are also provided with trailing carts with accommodations for one or two persons, which carts may be used or left at home at the option of the users.

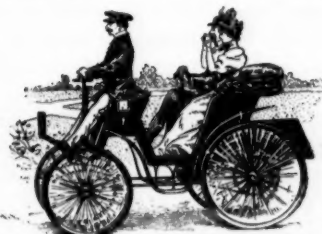
Strange Looking Vehicles.

The four wheeled French vehicles are built in various forms, many of them departing widely from the accepted styles of carriage construction. There are certain mechanical advantages in building vehicles that set close to the ground and have small wheels, and many of the vehicles are built on these lines. In very many cases no attempt has been made to follow the accepted ideas of carriage construction, thousands of vehicles being in daily use which come as far from meeting the American idea of a private conveyance, as does a milk wagon. Besides such



Daimler Carriage—English gasoline vehicle.

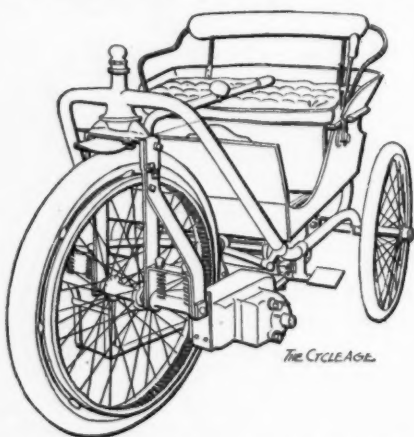
tent so long as his particular rig was in the latest style. A club was formed which rapidly assumed place among the largest, richest and most progressive clubs of the world. And still the automobile snorted, vibrated, stank and produced filth. At present a large percent of the French vehicles are either bicycles or tricycles, the latter predominating. The use of only two or three wheels, simplifies the mechanical problem involved in the construction of vehicles, as will be shown further on. The bicycle type of vehicle is used by few save those of sporting proclivities, while the three-wheelers are adapted to general use, in a restricted sense. They are designed to seat either one or two persons. Where seating ca-



French Gasoline Carriage.

vehicles, constructed for utilitarian purposes, there are others which have been built for mere speed—aptly termed “torpedoes on wheels,” from their appearance. Such vehicles have accomplished

a speed in excess of sixty miles an hour over comparatively long distances. The self propelled vehicles of Paris vary in form from the bicycle, loaded with eye offending engines and machinery, and the torpedo on wheels, to the elegant, though noisy and ill smelling carriage that closely resembles the modern horse drawn vehicle. Today the French are striving for more nearly perfect self propelled vehicles and are farther from the goal than the Americans. The proof of this: France is buying this class of conveyances from the United States in quantities that are,



Barrow's Mechanical Horse—American electric vehicle; front wheel designed to be attached to any ordinary vehicle to convert it into an automobile.

at present, limited only by the number that the makers will consent to spare for export trade.

A Great Advantage in France.

In addition to the mental make up of the Frenchman, there is another radical reason why an automobile that is suitable for use in France would be next to useless on this side of the Atlantic. The average French road is as good as the average American boulevard. Vehicles that would answer all purposes in France would go to pieces in short order when used on the country roads of the United States. American made automobiles give the very best of satisfaction in France. In the way of electrical vehicles they have nothing to compare with the best products of the American market and in vehicles deriving power from other sources we may safely be said to be at least on a

par with the French and are improving in construction much more rapidly than they.

Laws Against Automobiles.

France is not the only European country that is using the horseless vehicle. Germany and England come next. In the latter country, development has been greatly retarded by laws prohibiting self propelled vehicles from being used on public roads except under restrictions that were prohibitory. These laws were greatly modified about four years ago from which time dates the development of the industry in England. What has been said about French roads and their adaptability to use by automobiles applies, in a somewhat more restricted sense to other trans-Atlantic countries where automobiles are generally used.

Patents Hamper Work.

Still this does not prove that there are not excellent points in the French and other foreign vehicles nor that the American who could, within the next few months, duplicate one or more of the better productions in sufficiently large quantity, would not have a fortune in his grasp. But here the question of patents intervenes a prohibition. Almost all good mechanical devices are patented in the United States and the patents are already sold here, are held at a premium or are so widely scattered that it would be impossible to collect the number necessary to enable a manufacturer to construct the counterpart of the foreign vehicle in any reasonable length of time. The patents, however, covering motor vehicle construction are not so broad that mechanical substitutes can not be found for the points which they cover. Vehicle construction, steam engines and gas engines have long since passed their majority and cast off patent office leading strings.

Imperfect Development.

As has already been said, the perfect automobile does not exist at present—the handsome, stylish vehicle which can be started instantly and without previous laborious or lengthy preparation, can be stopped promptly, can be run at any speed up to twenty-five miles an hour and keep it up all day, can be perfectly con-

trolled by any person without special training, can travel over rough streets and roads, can climb stiff grades, can, in short, do anything and everything that a horse or span attached to a vehicle can do and do it more satisfactorily, do it at a fraction of the expense, and, at the same time, have none of the inherent

few years, have to be content with the best that he can get—and the chances are that he will not know enough to get the best. It is not the object of The Motor Age to throw cold water on the motor vehicle, but it would be a poor advocate of the industry if it failed to tell the truth. The best informed student of the question is in the position of the father who is anxiously waiting to find out if his first offspring be a boy or a girl.

Must Wait Long.

But the writer feels in duty bound, before parting with the secret of what little he knows, to warn the reader that if the latter has the necessary dollars which he expects to spend for an automobile so that he may take a few rides in the bracing air of late 1899, he is sure to be disappointed. He may write that he wishes to buy an automobile at once and say that he will send a check as soon as advised what the price is. He will receive a politely worded circular letter—circular, mind you—which will give him a little information about the style of vehicle to be had and will then inform him that the makers will be pleased to book his order if he will send a check for a third of the purchase price, the balance to be paid when the vehicle is ready to ship, and that, in case he sends check, his order will be filled in regular rotation, which, the makers hope—hope, mind you—will be within two or three months.

So much by way of preface.



Morris-Salon Electrobat—American electric vehicle.

faults of the horse and no new ones of its own. At present there are vehicles that combine many of these advantages but none that combine them all. As said, the perfect automobile vehicle does not now exist but within a decade we will surely have one that will closely approach perfection, as we view perfection today.

The prospective buyer will, for the next

(This article will be continued in succeeding numbers with a general description of automobile construction and a description of the various types of horseless carriages.)

THE ELECTRIC HUB MOTOR

The accompanying half-tone illustration shows the new vehicle made by the Hub Motor Co., which is composed of Charles Berg, a real estate man, and H. L. Irwin, an attorney. These men obtained the ideas and plans of the new form of auto from Fred J. Newman and Joseph Ledwinka. The company claims a broad patent on the application of the motors direct to the hubs of the wheels which

they are to turn, doing away, as will be seen by reference to the cut, with all intermediate gearing and all unsightly loads on the running gear, the batteries being carried under the seat.

If the hub-encased motors are all that are claimed for them they will not only give direct efficiency to the vehicle for the amount of power that the batteries can furnish but will also be very econom-

ical of current, allowing of the use of a smaller and lighter battery or a larger area of travel. It is well known that a given amount of power utilized by two or more motors is less efficient than when utilized through one, only. The loss by distributing it through four is claimed by the Hub Motor Co. to be more than overcome by the equitable traction of the four wheels and the absence of intermediate gearing. The claim seems rea-

The steering device is similar to that in common use, the front wheels being set on hubs hinged to a rigid axle. The vehicle shown is arranged for speeds of four, seven and fifteen miles, either forward or backward. All governing devices are convenient to the hand of the operator.

The wheels are forty-two inches in diameter and the tread eighty-four inches.



THE ELECTRIC HUB MOTOR CARRIAGE.

sonable, but whether or not it will show the 30 per cent gain over electric vehicles of the ordinary type remains to be seen when given public tests, for which the company is not yet ready.

The enlarged hubs are only eleven inches in diameter in the vehicle illustrated and do not detract from the sightliness of the vehicle. The construction will enable the company to follow very closely the regular lines of ordinary vehicles and thus enable them to produce them cheaply.

No sooner was the vehicle shown than J. M. Hirsh, an eminent chemist of Chicago, stepped in with a claim of prior invention, asserting that Ledwinka was in his employ as a draftsman and worked on the drawings of the hub motor, and after being dismissed, appropriated the plans. It is asserted, on the other hand, that Ledwinka had completed the plans for the motor before he was employed by Hirsh and had endeavored to interest capital as much as three years ago. The matter will doubtless be settled in the courts.

AUTOS TO CARRY THE MAILS

THE POSTOFFICE DEPARTMENT CALLS FOR BIDS TO CARRY THE MAILS BY SELF PROPELLED VEHICLES IN TWO CHICAGO DISTRICTS.—IF EXPERIMENT PROVES SATISFACTORY, AUTOS WILL BE GENERALLY USED.—OPINIONS OF POSTMASTERS IN LARGE CITIES.

It is not a cause for wonder that the postoffice department of the United States should take up the automobile problem, for the postal service is admittedly the most progressive and businesslike of all public service. Assistant Postmaster Shallenberger has called for proposals for carrying the mails in Chicago by automobiles. In his annual report he says that if the results of the use of automobiles prove satisfactory, this method of carrying the mails will undoubtedly supersede that employing screen wagons.

Advertise for Bids.

The authorities at Washington notified Postmaster Gordon, of Chicago, that bids for an automobile service between certain stations in the down town district should be advertised for on and after Saturday, November 18, and until December 5. Printed notices were posted in public places throughout the city, other notices to the public were issued throughout the daily press. Application blanks provided for the purpose will be sent upon request to any manufacturer who may desire to investigate the matter, together with a sheet of specifications detailing just what work must be done and the time allowed for its doing.

Merely a Test of Efficiency.

As the contracts now pending are merely to test the efficiency of the self propelled vehicle, such tests will be confined to continuous operation in the most congested portions of the business center. The most important routes to be covered will be those from the general office to the South Water Street and Monadnock stations, the former being the center of the commission merchant district and the latter depository of the publishing district. Hence these two stations will test the self propelled vehicle in more ways than one, for not only will it be necessary to carry the loads of mail conveniently and

safely, but the vehicles must make at least twenty-eight trips daily (the same as now made by the horse driven vehicle), and must of necessity be able to be handled in small space such as alleys and courts, all of which will demand simplicity in construction and positive motive force easily controlled.

The Three Systems Eligible.

The government will decide nothing as to whether electricity, gasoline or steam be used as power; all that must be done to satisfy the powers that be, is to guarantee (and post forfeit that it will be done), to make so many trips a day and handle mails as well or better than they are now handled at the same or lower cost.

The field in the service of Uncle Sam is enormous; in Chicago, alone, the contract work paid for by the government amounts to hundreds of thousands of dollars a year.

Postmaster Gordon's Opinions.

Postmaster Gordon of Chicago has been endeavoring for some time to improve the handling of mails in the down town district and believes the present state of affairs to be the outcome of his correspondence with Washington.

"I was hardly prepared," said Mr. Gordon, "for the news that they would be so ready to act upon my suggestions. I had written to Paris, France, where the automobile service has been successfully inaugurated, and also to Buffalo, where the postoffice department has made experiments along the same line.

"But Chicago's street pavements are not all up to the standard of smoothness attained in the boulevards of the metropolis of France, or even Buffalo, and until the streets here are improved I should not be prepared to recommend a general substitution of automobiles for the mail wagons now in use on account of the danger

of breakdowns. I believe, however, the use of the vehicles ultimately would result in an improvement of down town pavements. The change will probably come in good time, however, and it is quite likely the automobiles will be utilized for the class of mail collection work now being done by the mail cars that are operated in connection with the street railways."

A Voice From Boston.

Acting postmaster Henderson of Boston is enthusiastic over the automobile for postoffice use and has been endeavoring to have the system adopted, or at least tried in his city. "If the automobile wagons," he said, "are to replace the regular wagon now drawn by horses, and also the electric mail cars—a plan which is now in contemplation—a great advance will be made in methods of carrying the mail. A horse cannot stand eight hours a day of hard work, such as is necessary in drawing mail wagons, and therefore many of the wagons are obliged to put up before a day's work is done. When horseless wagons are used, the regular trips can be made in less than half the time it now requires, and each employe or driver on the wagon can work his full eight hours."

Brooklyn Postmaster Enthusiastic.

The most enthusiastic, however, is Postmaster Wilson of Brooklyn. He has come to the conclusion that there is nothing to prevent this service being adopted with the result of not only delivering the mails quicker and more safely, but at a great reduction in cost after the system has once been put into working order. Mr. Wilson has not only gone into the cost of the self-propelling vehicles, cost of maintenance and running, how they are manned and the motive power but has also gone over the pavements of Brooklyn with an eye to ascertain if the macadam and asphalt roads would make the service feasible. A little disagreement with the Brooklyn Rapid Transit Company about price of carrying mail has also helped his determination on and he is now ready to report to Washington that the plan is not only feasible, but would be the best thing that could be brought about in the end.

After looking over the figures he estimates that the cost of collecting and delivering mails would be about one-half the present expenditure. In the first place, the trolley service would be dropped, and this would mean the saving of thousands of dollars a year. Then the little wagons, never very favorably considered by the postmen, would also be done away with, and, eventually, the big mail wagons would also be superseded by the wonderful wagons of the day. There will be, if the plan is adopted, small automobiles for collecting the mails from the boxes, big autotrucks for delivering the heavy mail matter and swift carriers for taking the first class and light mail to suburbs like Flatbush, Bay Ridge, Fort Hamilton, Bath Beach, Bensonhurst and the various stations throughout the borough.

Revolutionize the Service.

"Why," said he, "we will revolutionize the postoffice service of the country, if not the world, when we have this system once in working order. There is no end to the improvement it will make in delivering and collecting mails to and from all points. I was led to believe when I first took up the subject that we could not get the necessary speed from the automobiles, but, unless my information from factories and other sources is entirely wrong, this is not so. In Paris and other places, where they are being generally used, these machines get up a speed of twenty miles or more, and this is above the speed required. Then, there was some objection raised on the point that the heavy vehicles could not store enough energy to carry the mails to distant points. This, too, I find is unfair to the modern horseless vehicles, for they are now being manufactured for heavy carrying with motive power to take it twice the distance we would require."

First Cost an Objection.

"But I do not wish to go too deeply into my project at present, as I would like to have Brooklyn the first city to introduce this scheme, which, I am satisfied, will redound to the credit of the service here. You may say, however, that the department is now considering the pro-

ject, and I see no reason why it should not be carried out as I have planned it. The first cost might be comparatively great, but it would be soon more than made up, and then the saving would be considerable, enough, in fact, to permit improvements in other lines."

Mr. Wilson said that so far as he could find out the best machines for his purpose would be those propelled by gasoline, as electricity as yet was too expensive and did not develop sufficient power either to well carry heavy loads or maintain the power for sufficient distances.

An Opinion From Headquarters.

First Assistant Postmaster General Heath has the following to say in his annual report anent the tests of the automobile in the collection of mails, recently made in Buffalo:

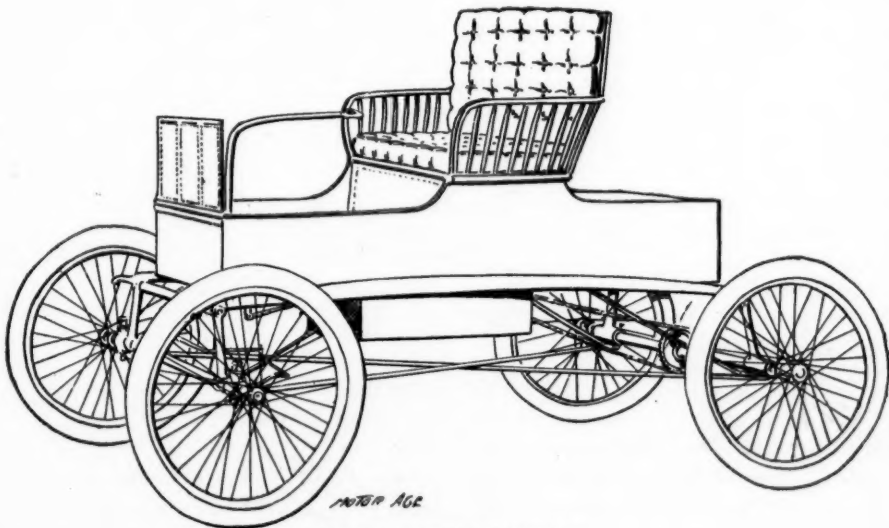
"The appearance of motor-driven ve-

hicles and their employment by the large retail stores of the cities for delivery wagons have suggested their use for the collection of mails from the street letter boxes. A practical test of the adaptability of the automobile for this work was made at Buffalo under the auspices of the department and the result, so far as it is related to that city and its superb streets, was entirely satisfactory. This experiment leads to the conclusion that valuable improvements to the collection branch through this new departure in locomotion are limited at present by requisite conditions, which seem to demand either asphalt or other smooth pavements. These deterrent conditions may and doubtless will be eliminated by further improvement in the carriages in the near future, when the substitution of motors for the horse and wagon will possibly become universal."

BALDWIN STEAM CARRIAGE

Providence, R. I., Nov. 20.—One of the Baldwin steam carriages described in The Motor Age of November 7 has been put through a very severe system of practical road tests during the past two weeks and has proved fully up to re-

quirements. Among the tests was that of climbing a sixteen per cent grade, which is usually regarded an admirable performance, but doubly so when it is considered that this was done both forward and backward, and that, during the back-



BALDWIN STEAM CARRIAGE.

ward climbing test, on the same grade, the carriage was stopped and then started again, climbing without remonstrance to the top. This was done not only once but several times and the results show conclusively that steam power as applied by the company will answer the requirements of the horseless carriage on high-ways of the country.

The price of the runabout will be from \$600 to \$800, according to equipment, and it will weigh about 400 pounds.

To overcome strain on the rear wheel while turning corners or on very uneven roads, the Baldwin Company has devised and patented an equalizing gear, which takes undue strain from either wheel. As shown by the cut, power is transmitted by a heavy block chain, which, although shown unprotected, is encased in

practice to keep dust and grit from the working parts.

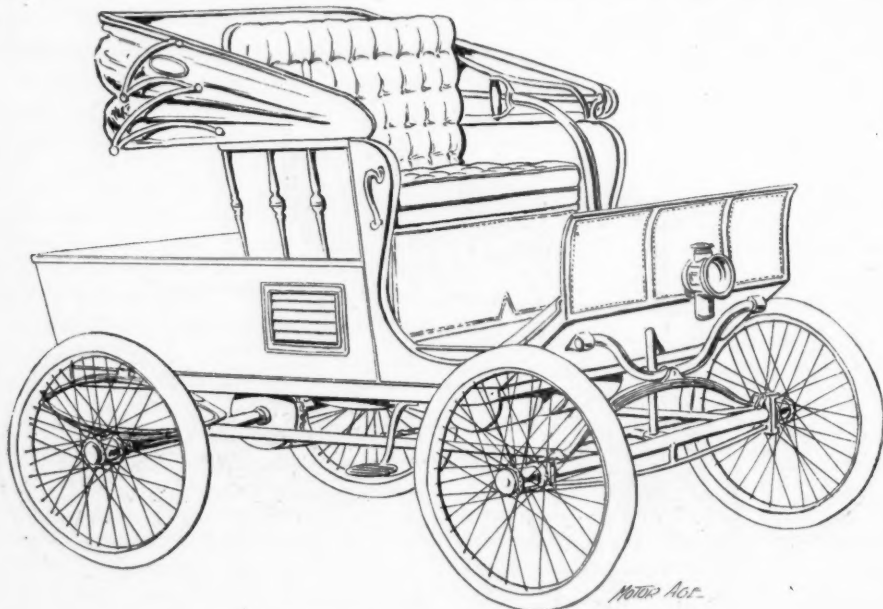
The water and gasoline are each divided into eight compartments, with small holes at the bottom of each partition wall. This arrangement keeps the liquids from slopping when the carriage is stopped or started suddenly. The steering is done with a lever working directly upon the front wheels, which are hung upon the knuckle-joint principle and which are under perfect control under the most difficult circumstances. All carriages are fitted with reverse lever and double band brakes of great power.

The company's delivery wagons will be thoroughly up to date in style and finish and a specialty will be made in this direction, the upper limit of price being \$1,800.

LEACH MOTOR CARRIAGE

The accompanying illustration and the one appearing on the front cover of this issue, give an excellent idea of the Leach motor carriage which the makers designate as pattern number two. It is a

single seated steam carriage, designed to carry only two persons. A carriage is offered similar in appearance except that two seats are provided for four persons, the rear seat removable when it is de-



LEACH STEAM MOTOR CARRIAGE.

sired to use the vehicle for only two people.

The running gear of these vehicles is made of steel tubing and each is provided with three elliptical springs. The boiler is fed automatically. The fuel is gasoline utilized in a burner that is provided with safety attachments and automatic diaphragm. The makers claim a fuel capacity for 100 miles and water capacity for

thirty-five. The compensating gear is carried on the rear axle, a double band foot brake is provided and foot reversing gear.

The Leach Motor Vehicle Co., of Everett, Mass., are the makers and lay claim to superior construction throughout and aver that the automatic devices will not fail to work.

EVOLUTION OF THE ACCUMULATOR

ARGUMENTS AGAINST THE USE OF ELECTRICITY AS APPLIED TO VEHICLES ARE ALL DIRECTED AGAINST STORAGE BATTERIES—POSSIBILITIES OF IMPROVEMENTS IN ACCUMULATORS ENTIRELY OVERLOOKED

Advocates of other forms of self propelled vehicles than the electric are prone to cry down the electrical vehicle on account of the accumulator or storage battery. They say it is too heavy, and that, heavy as it is, it furnishes power for too limited an area of travel and takes altogether too long to recharge to ever make it available for use except in cities, where the users do not have to go more than fifteen miles from home.

These statements are approximately true and yet—

The Auto is Not New.

But this is getting ahead of the story. The automobile is not new. It is very old. The first locomotive, the great-great grandsire of our present railroad locomotives, was an auto, in just the sense that we use the term today. The newspapers and periodicals are full of accounts of antiquated wagons and carriages that have been driven over common roads by steam power. Were the term traction engine to be used, scarcely anyone would think of it as an automobile, but traction engines have been in constant and economical use for many years and are still in use. It will be difficult for those who are familiar with them to recognize them by the new-fangled name, but if they are not automobiles, what are they?

The Gas Engine is Old.

The gas engine is nearly a century old and yet it is only within the past few

years that it has been so perfected that it has become practical for commercial purposes. Even after it had demonstrated its usefulness for furnishing light power, it was said that it had inherent faults that would make it impossible of adaptation to use for giving heavy power. Yet the Westinghouse company has just completed a 650 horse power gasoline engine that is entirely satisfactory.

It was never found necessary to construct a steam engine and boiler of such light weight for the power generated nor which would develop power so quickly, before the steam engine was applied to the automobile. Yet light, strong, self regulating boilers and engines have been constructed that promise to meet all purposes.

Progress Depends on Demand.

To return to the assertion of the critics of the electric vehicle, they state that the difficulties in the way of adapting the steam engine and the gas engine to the purposes of self propelled vehicles involved, and now involve only mechanical ingenuity in their removal. They say that with thousands of clever minds working on the problem complete success is bound to come. There is no doubt that it will.

The question to put to them is, "Why did not this success come many decades ago when the steam wagon (the 'rose' by another name) was young."

The answer is easy. The science of en-

gineering was a long way off from its present development, there was no numerous rich class to buy the first expensive autos and the general demand for them, even if they had been completed at that day, would have been comparatively small. Consequently there was no dream of millions to lure the inventive minds of that far off day to the work of solving the problem nor were there the correlative improvements of the present day in other lines of mechanical production to give them hints. For these reasons the auto lay dormant for decades and decades.

Many Minds at Work.

Now, with so many of the bright minds of the age at work, progress is so rapid that it is appalling. Mechanics and inventors see fortunes before them if they can perfect and put on the market a self propelled vehicle that will meet the requirements of a critical public. The whole secret of the evolution of the auto in the past few years has been the evident demand for it in quantities, which demand has been given wide publicity and has called the attention of the mechanically inclined to the fact that there were numerous fortunes awaiting for the successful ones.

The evolution of the steam and gasoline vehicles depends on mechanical science to banish the disadvantages which were all too plain.

Evolution of the Electric.

The evolution of the electric vehicle depends on chemical science to banish the disadvantages of the storage battery. At present the batteries which are used are composed largely of lead and lead is heavy. But it does not follow that there will not be as great developments in the production of storage batteries as there have been in other directions. The storage battery is comparatively new. In most of the uses to which it has been put, extreme weight has been no serious drawback. When it comes to be used on carriages which must travel over all kinds of roads it is a great drawback, and now that the need for a storage battery that is lighter has been given so much prominence, it is a foregone conclusion that

there will be hundreds of bright minds turned to the problem and that they will eventually solve it.

Many Signs of Progress.

Already signs of progress are rife. One man is heard to state that he has a battery that will carry a vehicle twice as far as any that has hitherto been tried. He confesses that his invention is so new that he can not tell what the life of the battery will prove to be. It may, and probably will be short lived. Then he will set himself the task of overcoming that difficulty.

Another says that he has a battery that can be charged at any voltage without injury to the battery. He claims that his experiments have proven his assertion to a certain degree.

Still another went to a manufacturer of storage batteries and gave an order for a battery made on certain plans which he submitted. The experienced manufacturer told him that electrical science was against him and that the battery, when made, would be worthless. Still the man insisted that his order be filled and it was filled. The manufacturer was not surprised to have the battery returned in a short time with disintegrated plates. He inquired carefully what it had accomplished and to his great surprise found that it had done far more than he had expected.

"Perhaps," said he, "that young man is on the road to a valuable discovery."

Great Possibilities.

These are but isolated instances of men that are working on the problem of the storage battery as applicable to the automobile. It shows that they are making progress—although, in the instances cited, the progress may never be of any value to them—and it follows that they are a very small percent of the vast number that are working on the great problem in this and other countries. The result is that the evolution of the storage battery is being worked out. It may, perhaps, be worked out, very soon, to a point where it will be a powerful rival of steam and gasoline for long distance vehicles.

The capital prize in the storage battery lottery if invention is, with no exaggeration, millions. Who will get it?



COMPENSATING CRANK SHAFT

WHITNEY'S INVENTION WHICH COMBINES THE COMPENSATING GEARING AND THE CRANK SHAFT WHICH IS DIRECTLY CONNECTED WITH THE TRACTION WHEELS.—OTHER PATENTS FOR DEVICES, GOOD AND BAD.

No. 636,701, to William E. Wentzel, Lynn, Mass., and George E. Whitney, Boston, Mass.—Whitney is the constructor of the well known Whitney steam carriage, and the invention is evidently intended to be utilized in connection with his usual method of motor construction. The Patent Office drawings, which are herewith reproduced in their entirety, appear at first sight to show an altogether too complicated device to be of any practical service. The mechanism illustrated, however, is extremely ingenious, and, as the most of what is shown in the drawings is almost entirely a part of the differential gear, which is called into action only when the vehicle to which it is attached is turning corners, and is, therefore, inoperative for the greater part of the time, as is the less complicated differential gearing in common use, it is not objectionable.

The object of the device is to connect the axle of the driving wheels of an auto directly with the piston rod of its motor by means of a crank, still permitting a differentiation of the traction wheels. This does away with gearing between motor and driving wheels.

There are no speed changes provided in the gearing, and such changes must, of course, confine the use of the invention to steam carriages. The device should make the auto, to which it is attached, extremely economical of power, ordinarily, and very powerful when power is needed.

"The utilization of a crank member, for transmitting the power of the motor to the driving-wheels of a vehicle," to quote the patent, "is productive of numerous advantages, such as the very direct application of power and the avoidance of a sprocket-chain or similar

power-transmitting device; but the combination of a crank member with compensating mechanism is broadly new."

A careful reading of the following description will well repay the trouble entailed for anyone interested in the motor vehicle problem:

Figure 1 is a front elevation of a crank-shaft and co-operating compensating mechanism with the inner bearings and their connecting trusses; Fig. 2 is a longitudinal sectional view through the center of the shaft; and Fig. 3 is a partial cross-section.

The shaft comprises an intermediate crank member and co-operating like tubular members a and b, separated from each other at their inner ends and at their outer ends securely attached to the driving-wheels W, (dotted lines, Fig. 2,) these members near their inner ends having external annular shoulders a' b', respectively.

The crank member is double—that is, has two like cranks c and d at right angles to each other, (Fig. 3,) and having oppositely extended from their inner faces tubular crank-pins c' d', the ends cx dx of these crank members extending snugly into the inner ends of, but rotatively movable relative to the tubular members a and b.

The ends of the crank member extend beyond the bearings, and in order to obviate the use of two cranks for each crank-pin, while maintaining the necessary rigid connection between the parts of the crank member a distance-bar 25, (Figs. 1 and 3), is provided, having an eye or hub 26 at each end, which is driven tightly on to a tapered portion 2 of each crank-pin, (Fig. 2), the bar being bent between its ends, as shown in Fig. 1, as the inner ends of the crank-pins ex-

tend oppositely beyond each other. A nut 3, screwed upon the threaded end of each pin against the hub of the distance-bar, holds it securely in place on the tapered portion 2.

Each crank-pin has extended through it a shaft e, (Fig. 2), hollowed out to lighten it and having formed upon it at one end a spur-gear e', which rests against the outer face of the crank, the opposite end of the shaft projecting beyond the pin being externally tapered at 4 to receive upon it the hub of a sprocket-wheel e2, held in place by a nut e3, screwed on to the reduced and threaded extremity of the shaft, the latter being movable bodily with the crank-pin and at times rotating therein, a sprocket-chain e10 connecting the sprocket-wheels.

The spur-gear e', carried by the crank-pin c', is in mesh with a large gear A, rigidly secured to the tubular member a between its shoulder a, and the adjacent crank c, the elongated hub ax of the gear entering a cylindrical bearing Ax, forming a part of the frame of the vehicle, the bearing supporting the driving-shaft at one side of the crank member thereof. This bearing has brazed on to it a hollow sleeve A', extended concentric to the shaft of the wheel-hub and provided at its outer end with the usual form of bearing (not shown) to support the tubular shaft member a adjacent the wheel, this sleeve forming, with the like sleeve B' at the opposite end of the shaft, a part of the frame of the vehicle.

The shaft end dx of the crank member has loosely mounted upon it adjacent the crank d a bevel-gear a, forming part of the compensating mechanism proper, a large gear B, keyed to this bevel-gear, meshing with the spur-gear e', carried by the crank-pin d', and beyond the hub of the gear g the shaft end dx is outwardly tapered at 5, (Fig. 2), to receive the hub of a gear-carrier or spider G, tightly forced upon the tapered portion and held by a key 6.

The spider has four radial arms, near the outer ends of which are rotatably mounted bevel-pinions gx, which mesh with the bevel-gear g and also with an opposed like gear h, the inner end of its hub resting against a nut 7, screwing on to

a threaded part 8 of the shaft end dx against the spider, the bevel-gears g and h and the spider, with its bevel-pinions, forming compensating mechanism proper, the previously described devices between the gear g and the left-hand wheel, (Fig. 2), connecting the latter, through the crank member, with the compensating mechanism proper.

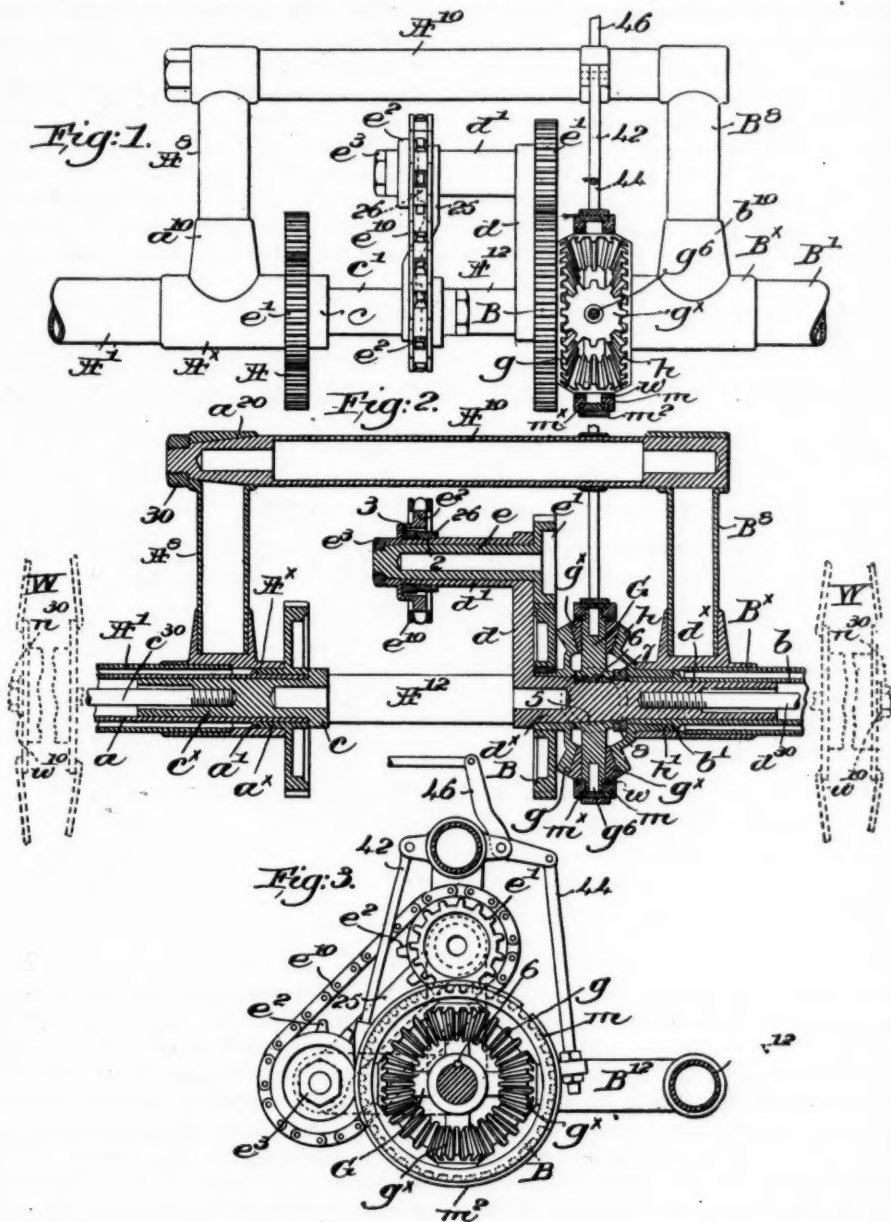
The bevel-gear h has an elongated hub h', which enters and rotates in the bearing Bx, the hub abutting against the shoulder b' of and being securely attached to the tubular shaft member b, the bearings Ax and Bx preventing outward movement of the two parts of the crank member. The bearings are provided with hollow bosses a10 b10 on their upper sides, into which are brazed upright hollow standards A8, B8, connected at their upper ends by a cross-bar A10, shown as hollow, it with the standards constituting a truss form of connection between the bearings. A similar truss connection A12 B12, (Fig. 3), is secured to the bearings at the back thereof and substantially at right angles to the upright truss, the two trusses serving to support the inner bearings for the driving-shaft.

The piston rods (not shown) are attached to the crank-pins c' d' of the shaft, the rotative motion being applied to the crank member of the shaft.

When the vehicle is going in a straight path, the wheel-carrying members a b rotate in unison with each other and with the crank members, as at such time the bevel-gears g and h will be locked together by the bevel driving-pinions gx, as is common in compensating mechanism of this type, the connections described between the gears A and B causing them to rotate in unison to thereby rotate the wheel-carrying members. When, however, the vehicle is turning a corner or traveling in a curved path, the outer driving-wheel will travel faster than the inner one, and at such time the compensating mechanism and the transmitting connections between the gears A and B will operate. If the left-hand wheel, (Fig. 2), is traveling slower than the right-hand wheel, the gear A will be retarded, rotating its meshing gear e' and the connected sprocket e2 on the crank-

pin c', the sprocket-chain e10 transmitting such rotation to the sprocket e2 on the crank-pin d', and thereby to the gear e' in mesh with the gear B, and the lat-

hand wheel travels faster than the right-hand wheel, then the gears A and B and the bevel-gear g will rotate faster than the gear h, and the difference in the speed



WHITNEY'S COMPENSATING CRANK SHAFT.

ter will be retarded or held back to the same extent as the gear A, so that the bevel-gear g will rotate more slowly than its opposed bevel-gear h. If the left-

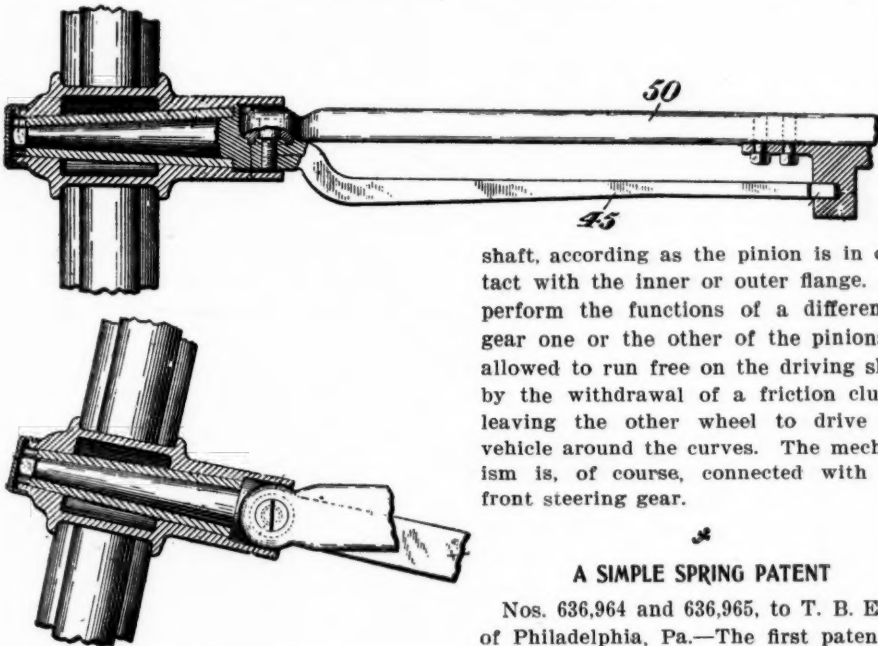
of the driving-wheels will be compensated for.

For convenience in assembling the parts the cross-bar A10 of the truss is

lever 70 can be shifted to any position and firmly held there while turning curves. The operating-arm 82 is mounted to turn in a collar or clip secured to the upper end of the steering-rod, which latter rod passes through and is guided in an upright or post, and this operating-arm or controlling-lever not only turns the steering-rod 81 when shifted in a horizontal plane, but also turns in a vertical plane to operate brake mechanism.

No less than sixteen claims have been allowed to this patent, fully covering the

O'Donnell, same place.—The inventor has wasted a great amount of grey matter devising ingenious but highly impractical transmission gearing. He has succeeded in getting eleven claims allowed, from all of which his patent attorneys alone will reap the benefit. It is intended for a substitution of the generally adopted form of differential gear. It provides driving wheels provided with two flanges to transmit the power, either forward or backward, by contact with friction pinions on the ends of a two-piece drive



Kendall's Steering Device (Figs. 2 and 3).

points described, as well as others in connection with the braking device.

It would seem that the inventor could have accomplished his ends more simply, as far as obtaining the reciprocating movement of his steering lever by the use of a cam system and have, at the same time, produced a more positive and better mechanical device. Nevertheless the patent shows much ingenuity, and the results produced are excellent.

A WASTE OF LABOR

No. 637,015, to Michael P. O'Donnell, Chicago, Ill., assignor to Joseph A.

shaft, according as the pinion is in contact with the inner or outer flange. To perform the functions of a differential gear one or the other of the pinions is allowed to run free on the driving shaft by the withdrawal of a friction clutch, leaving the other wheel to drive the vehicle around the curves. The mechanism is, of course, connected with the front steering gear.

A SIMPLE SPRING PATENT

Nos. 636,964 and 636,965, to T. B. Entz, of Philadelphia, Pa.—The first patent is on an electric vehicle in which springs of the usual vehicle type are interposed between the running gear and the battery box and between the battery box and vehicle body, and is contained in the following one claim:

"An electric vehicle comprising a truck consisting of axles and their wheels and perches or reaches rigidly attached to the axles, a motor mounted on the truck, a battery box, a carriage-body, springs interposed between the battery box and the truck, and springs interposed between the body and the battery box, substantially as described."

The second patent provides for springs between the running gear and the battery box and between the running gear and

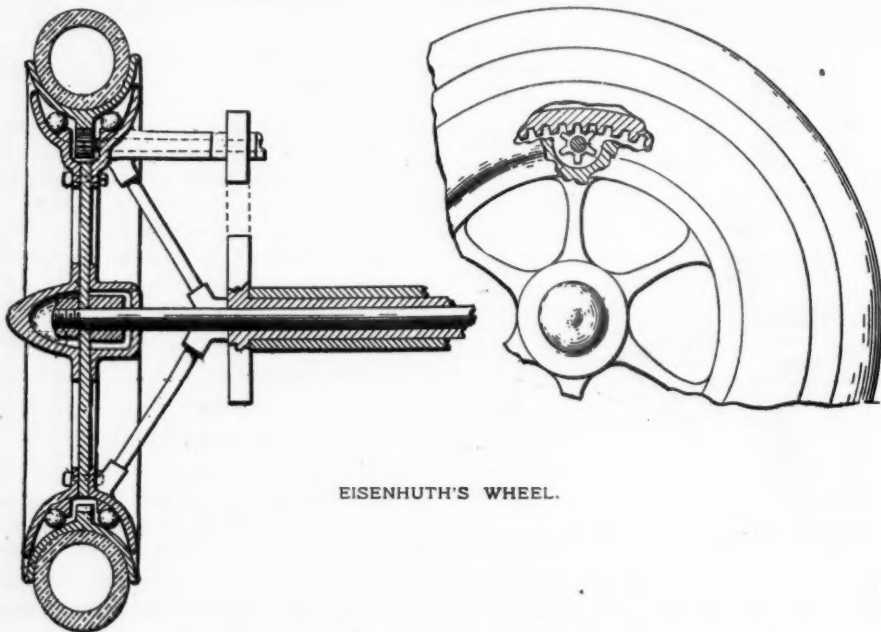
the vehicle body, for which one claim is allowed, quite as simple as the preceding.

EISENHUTH'S WHEEL

No. 636,900, to John W. Eisenhuth, New York, N. Y.—This is an ingenious and rather simple idea, evidently an attempt to overcome the difficulties of providing substantial wheels for automobiles. In practice, however, it would be expensive to build, heavier than desirable, and, at best, not readily applicable to any vehicles except electrics. It consists of a wheel composed of a rigidly braced central portion around which revolves a rim carrying a tire, ball bearings being interposed between the rigid

central portion and the rim. The illustrations show the construction clearly. Four claims are allowed, of which the first reads:

"In a wheel, the combination with a stationary central portion, of a revoluble rim portion, a gearing attached to the revoluble rim portion for moving the same, antifriction-bearings interposed between the stationary portion and the rim portion and arranged upon each side of the gearing, the said antifriction-bearings coming into direct contact with the said rim upon its inner surface, the structure being such that there will be no binding or twisting action between the parts in revolving the wheel, substantially as described."



EISENHUTH'S WHEEL.

MINOR MENTION

INFLUENCE OF THE AUTO

"The Influence of Automobilmism on Transportation" is the title of a work by Herr Berdow, which has just been published in Germany. Speed, he points out, is not of as much account as the fact that trade and personal convenience may be furthered by this new method of rapid transit. Furthermore, he says, the cost of automobiles can be greatly reduced by

making them less elegant and ornamental than they are at present, and if this be done they can be made to play their proper part as means of communication between towns and railroad stations.

Rural populations, Herr Berdow says, will derive a benefit from automobile omnibuses which they never knew before, and those who invest their money in an enterprise of this kind are not likely to

suffer any loss, for the cost of running such vehicles is comparatively small. On a German railroad, he says, about seventy-seven passengers must be carried to pay necessary expenses, whereas only from ten to twenty passengers are required to defray the expenses of an automobile omnibus.

Another scientist who has devoted his attention to electric motors is M. Marini. In a paper read by him before the Institut de Physique de l'Universite, in Rome, he declared that the currents which issue from electric tramways have a disturbing influence on magnetic needles. He has discovered that there are three different actions of unequal intensity—a direct action from the current of the conductors and the rails, producing disturbances in the mean position of the needle's equilibrium; an action from the subterranean currents, and an action caused by the masses of iron of which the motors are composed.

The first action, M. Marini says, has a disturbing influence for a distance of 150 metres, the second for 2,000 metres, and the third for only 10 metres.

TAYLOR GETS RECORDS

With the aid of his motorcycle pacing machine, Major Taylor has, at last, gained the much coveted bicycle record for one mile in 1:19. In addition to this he has secured the half-mile and third-mile records by the same aid. The record breaking was done at the public half-mile track in Garfield Park, Chicago.

A KANSAS CITY CONCERN

Kansas City, which makers of automobiles have shunned on account of the steepness of the grades in it, is threatened with an automobile manufacturing company of its own. People interested in the Weber Gas & Gasoline Engine Co. are forming a new company for the manufacture of vehicles.

A NEW AIR COMPANY

Announcement is made of the organization of the New York Air Compressor

Company under the laws of New Jersey. The capital stock of the company is \$100,000, and a complete foundry and machine shop plant has been purchased on the line of the New York & Greenwood Lake Railroad at Arlington, N. J. Contracts have already been let for a full modern equipment of tools. It is intended to manufacture a complete line of air compressing machinery at the new plant.

The officers of the company are: J. W. Duntley, president; Alexander MacKay, vice-president; W. P. Pressinger, secretary and treasurer; William B. Albright, W. O. Duntley, Thomas Aldcorn and Austin E. Pressinger, directors.

The New York officers of the company are at 120 Liberty street.

WHITNEY'S STAGE LINE

William G. Whitney continues to figure in the current literature of the automobile. His name was associated with the already exploded \$200,000,000 auto trust, his private rig ran down a bicyclist on Broadway and now the Fifth Avenue stage line which he controls in New York is to be turned over to a syndicate which desires to operate electric omnibuses in place of the antiquated horse drawn vehicles now in use. It is said that the 'buses will be built by the Columbia branch of the Electric Vehicle Company.

AUTO MAKERS WELCOME

Secretary-Treasurer Henry C. McLearn of the Carriage Builders' National Association writes that the statement, already corrected, made by The Motor Age to the effect that makers of autos were barred from membership in the association is without foundation. He adds that the association would be glad to have all of them become members.

REGULATIONS IN BELGIUM

In Belgium all automobile vehicles must carry, both in front and behind, a number large enough to be seen at a distance, and after sunset each number must be lighted by a lamp. All automo-

biles and bicycles must be provided with a brake. All self-propelled carriages must also bear the regulation number of the city and also the owner's name and address. Rubber-tired carriages must carry bells, and the maximum speed allowed is 18.64 miles an hour in the open country, and 7.46 miles an hour in town.

FIRE ENGINE TO THE RESCUE

Those who were on Chicago's Lake Shore Drive last Wednesday, were treated to the novel sight of a chemical fire engine playing on an automobile. The latter was one of the public cabs and had caught fire from the crossing of wires. The driver was the only occupant of the vehicle and the damage done was slight.

NOTES OF INTEREST

The commissioners of Fairmount Park, Philadelphia, have followed the practice of keeping track of the number

of the different types of vehicles that enter the park each month. For the month of October they report eighty-five automobiles. No accidents occurred to or on account of any of these vehicles.

While others are devoting their attention to the production of rapid fire guns on autos, Dr. Richard Gatling, the inventor of the gun bearing his name, is working on a horseless plow which he claims will do the work of eight men and twelve horses. He is also at work on an auto cultivator.

The Street Car Men's Union of Cleveland are planning to operate an automobile line in opposition to the street car company, raising the funds to buy the vehicles by subscription.

Three Michigan men are planning to operate an automobile line in Porto Rico in competition with a railroad.

Who shall say that the automobile has not come to stay, now that it has taken possession of the stage?

Inventors of devices applicable to automobiles are invited to communicate with the advertiser who is **CAPITAL** prepared to furnish working capital for the completion or improvement of devices (patented or not) that **FURNISHED** are mechanically correct and of practical utility. No attention will be paid to dreamers nor will the advertiser **INVENTORS** undertake the formation of any company except on a sound, businesslike basis. No multi-million dollar corporations float-ed. Letters to **BY AN** receive attention must give full details of inventions, time and financial backing **INVESTOR** necessary to put them in condition to begin manufacturing, approximate cost of production and value placed on inventions. Address in confidence, **INVESTOR**, care of The Motor Age, 324 Dearborn St., Chicago.

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